

Chapter 8: Implementation of the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area

Tracey T. Piccone

SUMMARY

Pursuant to the requirements of Section 373.4592(13), Florida Statutes (F.S.), this chapter presents an update on the progress of the implementation of the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area (Long-Term Plan) (Burns and McDonnell, 2003). Because there is overlap between many of the Long-Term Plan projects and other South Florida Water Management District (SFWMD or District) Everglades restoration efforts, the updates for many of the Long-Term Plan projects will appear in other chapters of the *2006 South Florida Environmental Report – Volume I*.

The Long-Term Plan projects that cover the Everglades Stormwater Program basins and source controls will be covered in Chapter 3, and the Long-Term Plan projects relating to the Everglades Construction Project Stormwater Treatment Areas will be covered in Chapter 4 of this volume. For additional reference, **Table 8-1** indicates the chapter where each Long-Term Plan project update appears. The financial reporting related to the implementation of the Long-Term Plan will be covered in Chapter 13 of this volume.

The long-term Everglades water quality goal is for all discharges to the Everglades Protection Area (EPA) to achieve and maintain water quality standards in the EPA, including compliance with the total phosphorus (TP) criterion established in Rule 62-302.540, Florida Administrative Code (F.A.C.). Substantial progress towards reducing phosphorus levels discharged into the EPA has been made by the state of Florida and other stakeholders.

As of April 30, 2005, the Everglades Agricultural Area's Best Management Practices and the Stormwater Treatment Areas combined have removed more than 2,234 metric tons of TP that otherwise would have entered the Everglades, however additional measures are necessary to achieve the Everglades water quality goal. The Long-Term Plan contains activities to achieve that goal and permits the state of Florida and the District to fulfill their obligations under both the Everglades Forever Act (Section 373.4592, F.S.) and the federal Settlement Agreement (Case No. 88-1886-CIV-MORENO). A summarized list and locations of the basins addressed in the Long-Term Plan are presented in **Table 8-2** and **Figure 8-1**, respectively.

The District continued implementation of the Long-Term Plan in Fiscal Year 2005 (FY2005) (October 1, 2004 through September 30, 2005). The District's request for a major revision to the Long-Term Plan was approved by the Florida Department of Environmental Protection (FDEP) on December 3, 2004, as summarized in this chapter.

Table 8-1. Summary of projects and reference chapters in the Long-Term Plan.

Project Code	Project Description	Chapter References in the 2006 SFER – Volume I
<u>Everglades Construction Project (ECP) BASINS</u>		
Bc10	Stormwater Treatment Area 1E (STA-1E) Enhancements	4 (STA-1E section)
Bc20	STA-1W Enhancements	4 (STA-1W section)
Bc30 & B509	STA-2 Enhancements	4 (STA-2 section)
Bc40	STA-3/4 Enhancements	4 (STA-3/4 section)
Bc50 & B510	STA-5 Enhancements	4 (STA-5 section)
Bc60 & B510	STA-6 Enhancements	4 (STA-6 section)
Bf	ECP Operation and Maintenance - STAs and non-STAs	4 (each STA section)
Bf80	ECP Compliance Monitoring	4 (each STA section)
Bc05	ECP Operations Monitoring	4 (project-level activities section)
Bf81	STA Site Management	4 (project-level activities section)
<u>Everglades Stormwater Program (ESP) BASINS</u>		
Bc75	Acme Basin B	3 (Section II)
Bc71	North Springs Improvement District (NSID)	3 (Section II)
Bc72	North New River Canal (NNRC) Basin	3 (Section II)
Bc73	C-11 West Basin	3 (Section II)
Bc74	Feeder Canal Basin	3 (Section II)
<u>PROCESS DEVELOPMENT AND ENGINEERING (PDE)</u>		
<u>Basin Source Controls</u>		
Bc81(1)	EAA Basins - Source Controls	3 (Section I)
Bc81(2)	C-139 Basin - Source Controls	3 (Section I)
<u>Enhanced Control and Monitoring</u>		
Bc82(1)	Acquisition of Survey Data	4 (project-level activities section)
Bc82(2)	Additional Flow and Water Quality Monitoring Stations	4 (project-level activities section)
Bc82(3)	Review and Correction of Flow Measurement Anomalies	4 (project-level activities section)
Bc82(4)	Analysis and Interpretation	4 (project-level activities section)
Bc82(5)	Update and Maintenance of Hydraulic Models	4 (project-level activities section)
<u>Improved Analytical and Forecasting Tools</u>		
Bc83(1)	Continued Development and Refinement of Dynamic Model for Stormwater Treatment Areas (DMSTA)	8
Bc83(2)	Water Quality Impacts of Reservoirs	8
Bc83(3)	PSTA Investigations	4 (project-level activities section)
Bc83(4)	PSTA Implementation Project in STA-3/4	4 (project-level activities section)
<u>Optimizing SAV Performance</u>		
Bc84(1)	Operational Strategy	4 (STA-2 section)
Bc84(2)	Vegetation Maintenance	4 (STA-2 section)
Bc84(3)	Hydrologic and Hydraulic Assessment	4 (STA-2 section)
Bc84(4)	Internal Measurements	4 (STA-2 section)
Bc84(5)	Comparative Analysis	4 (future reports)
<u>Additional Structural and Operational Measures</u>		
Bc25	Evaluation of Full-Scale STA Enhancements	4 (STA-1W section)
<u>Improved Reliability of Inflow Forecasts</u>		
Bc86(1)	Update Baseline Data Sets	8
Bc86(2)	Basins With Limited Current Data	8
Bc86(3)	Influence of Comprehensive Everglades Restoration Plan (CERP) Projects on Inflow Volumes and Loads	8
Bc86(4)	Lake Okeechobee Long-term Trends	8
Bc86(5)	Determine Water Quality Relationships in the Everglades Protection Area (EPA)	2C
<u>ACCELERATE RECOVERY OF IMPACTED AREAS</u>		
Bc87(1)	Recovery Model Development and Calibration	6
Bc87(2)	Downstream Influence of Adding Clean Water to Previously Impacted Areas	6
Bc87(3)	Options for Accelerating Recovery	6
Bc87(4)	Alternatives Analysis and Plan Formulation	6
Bc87(5)	Hydropattern Restoration	6
Bc87(6)	Implement Steps for Recovery in Impacted Areas	6
Bc88	<u>Adaptive Implementation</u>	8
Bc90	<u>Program Management</u>	8

Table 8-2. Everglades Protection Area (EPA) tributary basins included in the Long-Term Plan.

Basin	Canal	Stormwater Treatment Areas (STAs)	Receiving Water Conservation Areas (WCAs)
S-5A (EAA)	West Palm Beach Canal	STA-1W, STA-1E, STA-2	WCA-1
S-6 (EAA)	Hillsboro Canal	STA-2	WCA-2A
S-7 (EAA)	North New River Canal (NNRC)	STA-3/4	WCA-3A
S-8 (EAA)	Miami Canal	STA-3/4, STA-6	WCA-3A
C-51 West and L-8 Basin	C-51 West	STA-1E, STA-1W	WCA-1
C-139 (including Annex)	L-3 canal	STA-5, STA-6	WCA-3A
ACME Basin B	N/A	N/A	WCA-1
North Springs Improvement District (NSID)	N/A	N/A	WCA-2A
North New River Canal (NNRC) (G-123)	NNRC	N/A	WCA-3A
C-11 West	C-11 West	N/A	WCA-3A
Feeder Canal	L-28 interceptor canal	N/A	WCA-3A
L-28	L-28	N/A	WCA-3A

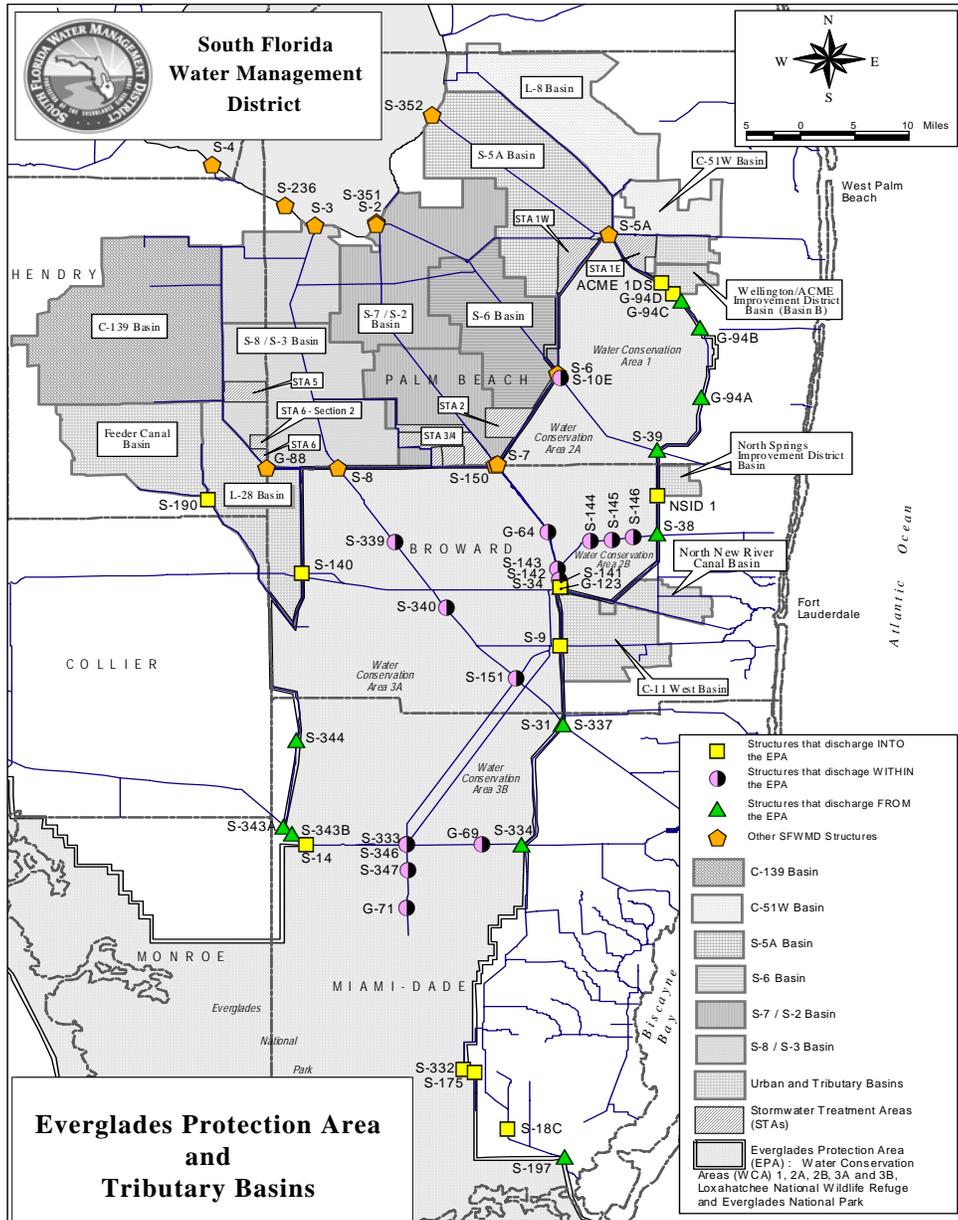


Figure 8-1. Overview of the EPA and tributary basins.

INTRODUCTION

The long-term Everglades water quality goal is for all discharges to the Everglades Protection Area (EPA) to achieve and maintain water quality standards, including compliance with the phosphorus criterion established in Rule 62-302.540, Florida Administrative Code (F.A.C.). Substantial progress towards reducing phosphorus levels discharged into the EPA has been made by the state of Florida and other stakeholders. The combined performance of the source controls in the Everglades Agricultural Area (EAA) and the Stormwater Treatment Areas (STAs) of the Everglades Construction Project (ECP) has exceeded expectations. In addition, some source control measures have been implemented in urban and other tributary basins included in the Everglades Stormwater Program (ESP). Nonetheless, additional measures are necessary to achieve the Everglades water quality goal.

The Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area (Long-Term Plan) contains activities to achieve that goal and to permit the state of Florida and the District to fulfill their obligations under both the Everglades Forever Act (EFA) [Section 373.4592, Florida Statutes (F.S.)] and the federal Everglades Settlement Agreement (i.e., Settlement Agreement dated July 26, 1991, entered in Case No. 88-1886-CIV-MORENO, U.S. District Court for the Southern District of Florida, as modified by the Omnibus Order entered in the case on April 27, 2001).

OVERVIEW OF THE LONG-TERM PLAN

The Long-Term Plan has three primary components:

1. **Pre-2006 Projects:** Structural and operational modifications that can be supported by the current scientific and engineering knowledge base, to be implemented where feasible by December 31, 2006, as well as operation, maintenance, and monitoring of the STAs. The pre-2006 recommended improvements and strategies are considered to be the maximum scientifically defensible steps that had been identified at the time the plan was developed. There is a possibility that these steps will meet a planning target of a long-term, geometric mean total phosphorus (TP) concentration of 10 parts per billion (ppb) in discharges from the various basins. However, it is also possible that these improvements and strategies will not, in and of themselves, provide adequate assurance of an ability to consistently meet that objective on a long-term basis. Therefore, the post-2006 strategy is included in the Long-Term Plan, as discussed below.
2. **Process Development and Engineering (PDE):** Process Development and Engineering activities have been designed to (1) further understand and optimize water quality performance in existing and proposed facilities; (2) facilitate integration with the Comprehensive Everglades Restoration Plan (CERP); (3) maintain and improve upon the contribution of source controls to overall water quality improvement goals; and (4) investigate ways to accelerate the recovery of previously impacted areas in the EPA. Data collected in the PDE will be used to improve the projects contained within the Long-Term Plan, as well as to form the basis for additional projects that may be required to achieve compliance with water quality standards.
3. **Post-2006 Strategy:** The post-2006 strategy will include the identification and adaptive implementation of additional water quality improvement measures that may be considered

necessary to comply with water quality standards following completion of the pre-2006 activities, based on ongoing analysis of the PDE effort. It also comprises implementation of steps identified that are capable of accelerating the recovery of previously impacted areas in the EPA, including final implementation of the hydropattern restoration activities directed by the EFA once water quality standards (including the phosphorus criterion) are achieved.

The Long-Term Plan was developed in recognition that:

- Achieving water quality standards, including the numeric TP criterion (Rule 62-302.540, F.A.C.) will involve an adaptive management approach, in which the best available information is used to develop and expeditiously implement incremental improvement measures consistent with informed and prudent expenditure of public and private funds.
- Continued investigations are necessary to further improve the overall operation and performance of integrated water quality improvement strategies.
- Significant performance and economic benefits can be realized by integrating Everglades water quality improvement measures with CERP projects, even to the extent that existing schedules should be reevaluated in some basins and synchronized with CERP project schedules. Modifications to the design and operation of planned CERP projects should be considered.

The Long-Term Plan (dated October 27, 2003) was submitted to the FDEP in December 2003 as part of the long-term permit application required by the EFA. The October 27, 2003 version of the Long-Term Plan is located on the District's web site at <http://www.sfwmd.gov/org/erd/bsfboard/waterquality.pdf>.

Additional information on the Long-Term Plan, including related links, documents, presentations, and photos, is also available online at <http://www.sfwmd.gov/org/erd/longtermplan/index.shtml>. A revised Part 2 of the Long-Term Plan was submitted to the FDEP on November 15, 2004. A description of the revisions is described in the *Revisions to the Long-Term Plan* section of this chapter.

The Basin-Specific Feasibility Studies, which formed the basis for the Long-Term Plan, are documented in the Evaluation of Alternatives for the ECP Basins (Burns & McDonnell, 2002) and the Basin-Specific Feasibility Studies, Everglades Stormwater Program Basins (Brown & Caldwell, 2002). The feasibility studies are also discussed in Chapter 8A of the 2003 and 2004 Everglades Consolidated Reports. Documents, presentations, data, and other related information on the Basin-Specific Feasibility Studies can be found on the District's web site at <http://www.sfwmd.gov/org/erd/bsfboard/bsfsboard.htm>.

STATUS OF PROJECT-LEVEL ACTIVITIES

The District began implementing the Long-Term Plan projects in Fiscal Year 2004 (FY2004) (October 1, 2003 through September 30, 2004) and continued implementation in FY2005. The second annual meeting was held on February 23, 2005 at the District's headquarters in West Palm Beach, Florida. The purpose of this meeting was to update the public on the status of the projects midway through the second year of implementation, and to receive input from the public on proposed modifications to the Long-Term Plan.

Because there is overlap between many of the Long-Term Plan projects and other Everglades restoration efforts by the District, updates for several of the Long-Term Plan projects will appear in other chapters of the *2006 South Florida Environmental Report – Volume I* (2005 SFER). **Table 8-1** summarizes all of the Long-Term Plan projects, including cross-references to other chapters in which the specific project update appears. An update on the status of project-level activities for eight of the Long-Term Plan projects for FY2005 is summarized below.

Continued Development and Refinement of the Dynamic Model Stormwater Treatment Areas

The Dynamic Model for Stormwater Treatment Areas (DMSTA) (Walker and Kadlec, 2002) is the tool used to model the future phosphorus performance of the STAs. The DMSTA was used to evaluate components of the Long-Term Plan and will be applied to future enhancements and the interaction between the CERP reservoirs and the STAs. To increase the certainty in the accuracy of the model predictions, the model will be updated and calibrated.

Refinements to the DMSTA include calibrating the model using large-scale systems operating in the event-driven mode (e.g., recent STA data), as well as the addition of model compartments, such as a reservoir module, sediment compartment and phosphorus speciation components. The tasks identified in the Long-Term Plan for FY2005 were completed by the U.S. Department of the Interior (USDOI) and the U.S. Army Corps of Engineers (USACE) through contracts with Dr. William W. Walker, Jr.

Additional information on the July 2005 refined version of DMSTA, referred to as Dynamic Model for Stormwater Treatment Areas Model Version 2 or DMSTA2, can be found online at <http://www.walker.net/dmsta/index.htm>.

Water Quality Impacts of Reservoirs

The Water Quality Impacts of Reservoirs Project was initiated in FY2004, as recommended in Section 5.3.2, Water Quality Impacts of Reservoirs of the PDE component of the Long-Term Plan. Because some of the STAs will receive discharges from CERP reservoirs, the primary objective of this project is to assist CERP's Project Delivery Teams (PDTs) in the acquisition and analysis of calibration data sets for use with a water quality model capable of simulating reservoirs. In FY2004 and continuing into early FY2005, work on this project was completed under contract with Burns & McDonnell.

There were three major tasks associated with this contract. The first task involved identification of data sites and data acquisition. Thirty-six primary data sites were identified, and various types of data were acquired from three Water Management Districts in Florida. These data include the physical characteristics of the water bodies, time series and non-time series hydrologic and hydraulic data, time series water quality data, non-time series biological data, time-series atmospheric data, and cost information.

In order to be useful as a calibration data set, the 36 primary data sites were rated as good, fair, and poor based on the data selection criteria developed by the project team. As a result, eight data sites were rated as good and selected for further analysis. The second task involved the data analysis for the eight selected data sites. The final task involved the transformation of the data for use in calibration of a reservoir water quality model. The data was provided to Dr. Walker for use in developing and refining the reservoir module of the DMSTA.

All of the documents completed by Burns & McDonnell in support of this project can be found online at <http://www.sfwmd.gov/org/erd/longtermpplan/documents.shtml>. All of the hydrologic, water quality, and climatic data collected for the 36 candidate data sites plus the water and phosphorus balances for the eight potential data sites are available from the District's web site at <http://spatial1.sfwmd.gov/wqir/>.

Update Baseline Data Sets

As recommended in the Long-Term Plan, the analyses presented in the baseline data for the Basin-Specific Feasibility Studies to Achieve the Long-Term Water Quality Goals for the Everglades (Goforth and Piccone, 2001) should be updated no less frequently than once every two years to continually improve the degree of confidence in the projected TP loads in inflows to the treatment areas, or in some instances, in discharges directly to the EPA.

The baseline data report employed available flow and water quality data from 1989–1999; in some basins, little data was available at that time. The first update was completed in FY2005 by District staff and consultants to include the record flow and water quality data through April 30, 2004. A revised ECP base run using the latest version of the South Florida Water Management Model was completed in FY2005 to reflect the latest calibration data for EAA runoff, and to incorporate the latest ECP design information.

During FY2005, new 36-year inflow data sets were developed by District consultants using the latest ECP simulation and the updated flow and water quality data. These data sets were used during the conduct of the EAA Regional Feasibility Study to evaluate alternatives for optimizing the phosphorus removal performance of the ECP STAs (including the expanded STAs described in the *Revisions to the Long-Term Plan* section of this chapter) in concert with the EAA Storage Reservoir Project and the Bolles and Cross Canal Improvements Project.

The Long-Term Plan recommendation was to provide funding for the inflow data set updates beginning in FY2005, and extending through FY2015 in alternating years. The District provided the funding for the FY2005 update of the inflow data sets and the next scheduled update is FY2007. The District has the responsibility for updating the baseline data sets; the updated data sets are reviewed by the FDEP as well as interested stakeholders.

Basins with Limited Current Data

Water quality performance projections for Everglades restoration efforts depend on understanding water movement and nutrient loadings from multiple watersheds. The projections utilize models that are calibrated from flow and water quality data collected at representative sites throughout the region. After the Everglades Protection Project Conceptual Design (Burns & McDonnell, 1994) was developed, there was an acknowledged uncertainty in the relationship between discharge volumes and TP from the C-51 West basin.

This uncertainty remained when the 2002 Basin-Specific Feasibility Studies for the ECP basins were completed (Burns & McDonnell, 2002). The first basin to be examined under this Long-Term Plan project was the C-51W sub-basin. To better estimate the flow and TP loading and concentrations leaving the C-51W sub-basin, updated flow and TP data from the S-5AE and State Road 7 structures were analyzed, and a regression equation was developed.

The results of this analysis indicate that the basin's flow-weighted TP mean concentration is approximately 115 ppb, about 38 percent less than the value used in the development of the Long-Term Plan. The net effect of this reduction is a lower estimate of the future TP loads entering Stormwater Treatment Area 1 East (STA-1E).

The final paper describing the C-51W sub-basin updated flow and phosphorus data can be found at <http://www.sfwmd.gov/org/erd/longtermplan/documents.shtml>.

Influence of the Comprehensive Everglades Restoration Plan Projects on Inflow Volumes and Loads

As the CERP projects proceed through planning and implementation, the projected impact of these projects on the inflow volumes and loads to the STAs and to receiving water bodies in the EPA needs to be updated. Of particular interest is the EAA Storage Reservoirs Project, which will be linked operationally to one or more of the STAs upon its completion.

During preparation of the Basin-Specific Feasibility Studies, very little information was available about the relationship of the EAA storage reservoirs outflows to STA inflows and, therefore, various assumptions were made with the understanding that future updates would be made as more information became available.

Because the Phase I EAA storage reservoir has been expedited to the design phase, better information now exists regarding the proposed size, location, and operation of the reservoir, which will provide inflows to the STAs. In FY2005, as part of the EAA Regional Feasibility Study, analyses were conducted to determine ways to optimize the performance of the linked Phase I EAA Storage Reservoir and the STAs. It is expected that results from this study will be available in early FY2006. A description of the EAA Regional Feasibility Study is included in the Revised Part 2 of the Long-Term Plan dated November 2004, which can be found at <http://www.sfwmd.gov/org/erd/longtermplan/documents.shtml>.

Lake Okeechobee Long-Term Trends

Lake Okeechobee will contribute a significant portion of the water anticipated to be captured and treated in the STAs. A better understanding of the temporal and spatial characteristics of the water leaving the lake is needed for updated STA performance projections. An examination of the water quality and flow from the structures discharging lake water into the EAA (S-351, S-352, and S-354) and ultimately into the STAs is currently being conducted by the District.

Adaptive Implementation

Part 6 of the Long-Term Plan includes a recommendation that a dedicated funding source be established to facilitate the adaptive implementation process and assure that additional steps are expeditiously implemented. The Long-Term Plan includes a recommendation for funding of \$36 million distributed as \$9 million per year from FY2007–FY2010. Although no funds were recommended for this project until FY2007, an opportunity arose in FY2004 to integrate with the expedited Bolles and Cross Canal Improvements Project with the goal of improving the ability to provide interbasin transfer of water among the STAs for more balanced and integrated operations.

Additional information on this revision to the Long-Term Plan, including the transfer of funds and the FDEP approval of the revision, is further discussed in the *Revisions to the Long-Term Plan* section of Chapter 8 in the 2005 SFER – Volume I.

In FY2005, in keeping with the adaptive implementation process, funds were budgeted for the Adaptive Implementation project to assist with the costs to complete the EAA Regional Feasibility Study. This study includes evaluating ways to optimize interaction between CERP projects, the EAA Storage Reservoir Project, the Bolles and Cross Canal Improvements Project, and the Everglades Construction Project to optimize the phosphorus removal performance of the STAs. The EAA Regional Feasibility Study is scheduled for completion in early FY2006.

Program Management

During FY2005, program management activities performed by the District and contractors included maintenance of the project schedules, STA operational support, and overall Everglades program coordination.

REVISIONS TO THE LONG-TERM PLAN

As stated in the amended EFA (2003), revisions to the Long-Term Plan shall be incorporated through an adaptive management approach, including a PDE component to identify and implement incremental optimization measures for further phosphorus reductions. Also, as stated in the amended EFA, revisions to the Long-Term Plan shall be approved by the FDEP.

The Long-Term Plan dated October 27, 2003 includes a proposed process for revisions to the plan. Revisions to the Long-Term Plan are classified as minor or major based upon the following criteria: (1) the magnitude and nature of the proposed revisions; (2) the potential for the proposed revision to have environmental impacts that are significantly different from those previously considered by the FDEP for the project; (3) the potential for the revision to adversely impact the intent and purpose of the Long-Term Plan; and (4) whether the revision requires approval by the District's governing board. As required in Section 1.10.4 of the Long-Term Plan, a description of the revision, whether minor or major, is to be included in the annual consolidated report.

On November 15, 2004, the District submitted a request to the FDEP for a proposed major revision to the Long-Term Plan. A copy of the District's letter to FDEP can be found at: <http://www.sfwmd.gov/org/erd/longtermplan/documents.shtml>. The Revised Part 2 document, which was submitted with the District's letter, can also be found at this web site.

A description of the proposed revision to the plan is presented below:

As part of the adaptive implementation process envisioned by the Long-Term Plan, it was anticipated that further refinements to the recommended water quality improvement measures would be made at the earliest achievable dates as more scientific and engineering information was obtained. The enclosed is a refinement to the Pre-2006 Projects for the Everglades Construction Project (ECP) basins. The refinements include expanded Stormwater Treatment Areas (STA), revised STA enhancements, and changes to the construction schedules. In addition, recreational facilities are proposed for each STA in accordance with the public access and recreation requirements of the Everglades Forever Act. These facilities shall be designed to ensure compatibility with the restoration goals of the Everglades Construction Project. The District is hereby amending its December 19, 2003, permit application to include these revisions.

On December 3, 2004, the FDEP approved the District's proposed major revision to the Long-Term Plan. A copy of FDEP's letter to the District can be found at: <http://www.sfwmd.gov/org/erd/longtermplan/documents.shtml>.

A description of a previously approved revision to the Long-Term Plan can be found in Chapter 8 in the 2005 SFER – Volume I.

The following text from Part 6 of the Long-Term Plan describes the process for incorporating new information into the Long-Term Plan projects:

It is intended that additional measures be expeditiously implemented following confirmation of their scientific defensibility and confirmation of their need, both of which are intended to result from the Process Development and Engineering component discussed in Part 5 of this Long-Term Plan. This PDE component will continue through 2016, with annual evaluations of the data collected and model refinements. The evaluations will address attainment of the planning objective and other long-term water quality improvement objectives of the Everglades Forever Act, and will recommend additional measures as may then be considered necessary. The evaluations will be presented and reviewed at the District's public STA Design Review Staff meetings (now renamed to the Long-Term Plan Communications Meetings). Information and recommendations resulting from the PDE effort are intended to be coordinated by the District, in consultation with the Department, and implemented through the renewal process for the District's permits and other public processes.

All of the Long-Term Plan projects, including the PDE projects, receive thorough and continual evaluation through the Long-Term Plan Technical Working Group meetings, a subset of the Long-Term Plan Quarterly Communications Meetings. The evaluations include thorough scientific review of the individual projects and their results to date, recommendations for improvements to the Long-Term Plan projects, and proposals for additional projects. Upon approval by the FDEP, revisions to the Long-Term Plan are expeditiously implemented. This revision and approval process which includes stakeholder involvement, public input, scientific review, and regulatory approval, is intended to ensure attainment of the goals of the Long-Term Plan.

CHALLENGES TO ACHIEVING LONG-TERM WATER QUALITY GOALS

Successful implementation of the Long-Term Plan will require integration of numerous research, planning, regulatory, and construction activities. The District and the FDEP are committed to achieving these long-term water quality goals. Some of the more significant challenges for these goals include regulatory issues, uncertainties in long-term performance of source control and in regional treatment technologies, and integration with CERP projects.

REGULATORY ISSUES

In July 2003, the state of Florida's Environmental Regulation Commission (ERC) adopted a phosphorus-specific water quality standard for phosphorus within the EPA that includes:

1. A numeric criterion of 10 ppb for TP in the EPA;

2. Two moderating provisions which authorize discharge to the EPA where the criterion cannot yet be achieved: (1) a net improvement moderating provision for discharges into impacted areas; and (2) a hydropattern restoration moderating provision for discharges into unimpacted areas. Both moderating provisions require the implementation of Best Available Phosphorus Reduction Technology (BAPRT). The hydropattern restoration moderating provision also requires a demonstration that environmental benefits of the discharge clearly outweigh potential adverse impacts; and
3. A method for determining achievement of the TP criterion.

In June 2004, an administrative law judge issued a Final Order in favor of the state of Florida supporting the ERC's adopted TP rule. The rule was then submitted to the U.S. Environmental Protection Agency (USEPA) for approval upon resolution of the challenges. The USEPA approved the rule, with the exception of one provision, in January 2005. The FDEP initiated rulemaking to revise the rule and the revised rule was adopted by the ERC in May 2005. The revised rule was submitted to the USEPA in June 2005 and approved by the USEPA in July 2005. Additional information on the adopted TP standard can be found in Chapter 2C of this volume.

The Long-Term Plan being implemented by the District has the planning goal of achieving water quality standards, including the TP criterion in the EPA. During the initial phase of implementation (pre-2016) of the Long-Term Plan, permits issued by the FDEP shall be based on BAPRT, as defined by the EFA, and shall include Technology-Based Effluent Limits consistent with the Long-Term Plan.

In addition, the FDEP must evaluate water quality standards for parameters other than TP for the EPA and EAA canals. As a part of this evaluation, the FDEP is also specifically directed by the EFA to recognize by rulemaking the existing beneficial uses of the EAA conveyance canals.

The FDEP has been evaluating water quality standards for canals as a part of a state-wide reevaluation of water quality standards with a specific emphasis on classifications, which will include consideration of the existing beneficial uses. The FDEP will be conducting this review in consultation with a technical advisory committee of appropriate stakeholders, with final recommendations from this effort due by March 1, 2007. Other regulatory issues are discussed in Chapter 3 of this volume.

STORMWATER TREATMENT AREA OPTIMIZATION RESEARCH

Chapter 4 of this volume presents a summary of STA optimization research that occurred in FY2005. While critical research is continuing on STA optimization, the Long-Term Plan includes a process of adaptive implementation to incorporate the best available and scientifically defensible information during implementation of the Long-Term Plan.

SOURCE CONTROL MEASURES

While landowners within the EAA as a whole have implemented effective source control BMPs, the Long-Term Plan includes funding for identification of "hot spots" within the EAA, and for implementation of source control measures in these locations. The Long-Term Plan also includes funding for identification and implementation of source control measures in other rural (non-ECP) basins and in urban basins.

Compared to what is known about source control measures in the EAA, minimal information is currently known about the technical efficacy and economics of controlling TP loads from the non-ECP basins (i.e., urban and non-EAA basins). Controlling TP loads at the source, both in the EAA and the non-ECP basins, is a high priority in the Long-Term Plan.

For this reason, source control development and implementation funding was provided in FY2005, and will continue to be provided throughout the implementation of the Long-Term Plan. Additional information on the Long-Term Plan source control projects can be found in Chapter 3 of this volume.

SYNCHRONIZATION WITH COMPREHENSIVE EVERGLADES RESTORATION PLAN PROJECTS

The majority of Everglades tributary basins contain proposed CERP projects. During FY2004, the District coordinated with members of CERP's PDTs in an effort to integrate Long-Term Plan projects with CERP projects, where possible, consistent with the following language from the amended EFA:

It is the intent of the Legislature that implementation of the Long-Term Plan shall be integrated and consistent with the implementation of the projects and activities in the Congressionally authorized components of the CERP so that unnecessary and duplicative costs will be avoided. Nothing in this section shall modify any existing cost share or responsibility provided for projects listed in s. 528 of the Water Resources Development Act of 1996 (110 Stat. 3769) or provided for projects listed in section 601 of the Water Resources Development Act of 2000 (114 Stat. 2572). The Legislature does not intend for the provisions of this section to diminish commitments made by the State of Florida to restore and maintain water quality in the Everglades Protection Area, including the federal lands in the settlement agreement referenced in paragraph (4)(e).

Integration efforts in FY2005 generally consisted of providing funds from Long-Term Plan projects to CERP projects for activities such as analysis of potential water quality improvement features that could be added to CERP projects as locally preferred options. In the case of the first approved minor revision to the Long-Term Plan, the integration effort consisted of providing funds to complete the EAA Regional Feasibility Study that will integrate Long-Term Plan projects with CERP projects to allow improved water quality performance for the ECP.

The potential remains for significant cost savings by integrating some of the Long-Term Plan components with CERP projects. Many of the CERP projects are still in the early planning and design phases. Therefore, uncertainty continues to exist in how CERP projects will influence flows and water quality as well as their implementation schedules. Continued close coordination is needed between members of the PDTs and staff implementing the Long-Term Plan components to ensure that project goals are met on schedule.

STATUS OF WATER QUALITY AND FLOW CONDITIONS IN THE EVERGLADES PROTECTION AREA

Because FY2004 and FY2005 were the first two years of implementation of the Long-Term Plan, and because the STA enhancements are still under construction, it is not yet possible to show any clear link between how the EPA is responding to the Long-Term Plan projects with respect to both water quality and flows.

As noted earlier in this chapter, the EAA BMPs and the STAs have been performing well for many years, and as a result, water quality conditions are improving in the areas of the EPA that are downstream of the STA discharges. Although an attempt will be made in next year's SFER to qualitatively link the response of the EPA to the STA discharges, it may not be possible to quantitatively show the water quality response of the EPA to the Long-Term Plan projects until a year or two after the STA enhancements are complete (after 2006) and then again, until after the STA expansions are complete (after 2009).

Similarly, the response of the EPA from a flow perspective might not be measured until a year or two after the Hydropattern Restoration projects are complete (after 2012), however efforts are currently underway as part of the Long-Term Plan to develop the tools necessary to predict the response of the system to the proposed Hydropattern Restoration projects also included in the Long-Term Plan.

In order to provide a better picture of the system-wide changes due to the many different restoration activities under way in the EPA tributary basins, it is proposed that future versions of the SFER include a map of the South Florida region depicting the reductions in TP as flows and TP loads move through the system.

For more information on the current status of water quality in the Everglades Protection Area, please refer to Chapter 2 of this volume and for more information on the current status of the hydrology of the South Florida environment, please refer to Chapter 5 of this volume.

CONCLUSIONS

The Long-Term Plan is predicated upon maximizing water quality improvement through an adaptive implementation process in which:

- All scientifically defensible steps are taken at the earliest achievable dates and in full recognition of the timeline established in the EFA.
- Focused efforts are directed to improving the scientific and technical basis for additional steps, leading to incremental implementation of those steps as soon as their needs are confirmed.
- The synergy between this effort and other regional efforts, particularly CERP, is recognized, and maximum benefit realized from full integration with those efforts.
- Existing and proposed treatment facilities are operated, maintained, and monitored to maximize their treatment effectiveness.
- Steps are being taken to accelerate the recovery of previously impacted areas in the EPA, including completion of the hydropattern restoration goals of the EFA.

In FY2005, the District continued implementation of the numerous projects of the Long-Term Plan, as required by the EFA, and is following a process of adaptive implementation consistent with the above-mentioned goals and objectives.

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